Message

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Sent: 3/30/2016 8:52:38 PM
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Subject: New Paper which is under Review

http://www.biogeosciences-discuss.net/bg-2016-104/

This is a new paper that is under review. Unfortunately, I don't believe it includes data from within Oregon State water's but it does include
information and analysis for a site off of La Push, WA and a site in the California Current (CCE2, latitude 34.3, long 120.8). In this paper, they compare
to aragonite saturation thresholds where shellfish experience acute and chronic effects (including mussels, oysters, etc) and they also calculate
the frequency of exposure to chronic/acute stressors for present conditions and during pre-industrial times.

Below are some relevant results, please note station Cha ba is the station at the 100 m depth contour off of La Push, WA.

Monthly climatology of Ω_{arag} developed from the mooring observations at Chá bâ suggest that present-day Ω_{arag} conditions reached chronic exposure levels for *C. gigas* larvae (Ω_{arag} <2.0) over 50% of the time from November to March, with nearly the entire months of December through March at Ω_{arag} values less than 2.0 (Fig. 9b). These present-day conditions prevailed over more of the year compared to pre-industrial times, when the most extensive chronic exposure occurred only up to 64% during March (Fig. 9a). Conditions that cause acute responses in *C. gigas* larvae (Ω_{arag} <1.5) were minimal year-round at Chá bâ except for March, when these conditions persisted in the present day during 37% of the month (Fig. 9b) and only 14% of the month during the pre-industrial (Fig. 9a). A similar seasonal pattern also existed for *O. lurida* larvae (Ω_{arag} <1.4), when chronic exposure levels in March exceeded 27% during the present (Fig. 9b) compared to only 11% during pre-industrial (Fig. 9a). For *M. californianus* larvae, present-day chronic exposure levels (Ω_{arag} <1.8) prevailed over 40% of the time in January through March at Chá bâ while there was less chronic exposure at CCE2, at 11 to 38% of time in March through July (Fig. 9b). In both cases, present-day exceedance of these thresholds prevailed over fewer months and at a smaller percentage of the time during those months (Fig. 9a). For *M. arenaria*, present-day Ω_{arag} conditions exceeded chronic exposure levels at the Gulf of Maine mooring between 11 to 31% of the time during December through April, with peak exposure levels in February and March (Fig. 9b). In contrast to the CCE, which experienced corrosive Ω_{arag} conditions before ocean acidification, Gulf of Maine surface water conditions did not exceed biological thresholds for *M. arenaria* at any point during the year in pre-industrial times (Fig. 9a).

Cheers,

Cheryl